Seeding Date and Cultivar Influence on Soybean Performance in Northeastern North Dakota-2018

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Soybeans have become an important crop in the northeast region of North Dakota. Seeding date and cultivar selection are two important production decisions that producers make in order to maximize production. The objective of this study was to determine the relationship between cultivar maturity and seeding date on yield and agronomic traits.

Methodology:

The field design was a randomized complete block in a split-plot arrangement with four replications. Seeding dates were May 15, May 24, June 4, June 14, and June 25. Three Roundup Ready cultivars were used with maturity ratings of 00.5, 00.9 and 0.1. An established stand density of 180,000 plants/a was the target. Plot size was 3.5' x 21' with seven six inch rows. Net Return $/a = yield x $7.50 bu/a.

Results:

Cultivars seeded June 25 did not mature prior to the first killing freeze on September 29. Only height of 1st pod and plant height data are reported for all seeding dates. There were no significant differences in plant stands between seeding dates or cultivars (data not shown). Statistically significant seeding date by cultivar interactions occurred on some agronomic traits but only means averaged over cultivars or seeding dates are examined in this report (Table 1). Plant and pod height decreased with later planting dates with the 0.1 cultivar having the greatest height. Percent grain protein increased and oil content decreased at later planting dates. There were significant interactions between seeding dates and cultivars for yield and net return. Yields were the greatest at the earliest seeding date and decreased at each of the later subsequent dates (Figure 1). The yield difference between the May 15 and June 14 seeding dates for the 00.5, 00.9 and 0.1 cultivars were 13.6, 21.4, and 23.7 bu/a, respectively. Cultivar maturities of 0.1 and 00.9 had higher yields at the May 15 and May 24 seeding date, but at the latest seeding date the 00.5 cultivar had the highest yield. Net Return $/a results followed the same trends as yield.

Table 1. Seeding date effects on various agronomic traits averaged over cultivars.

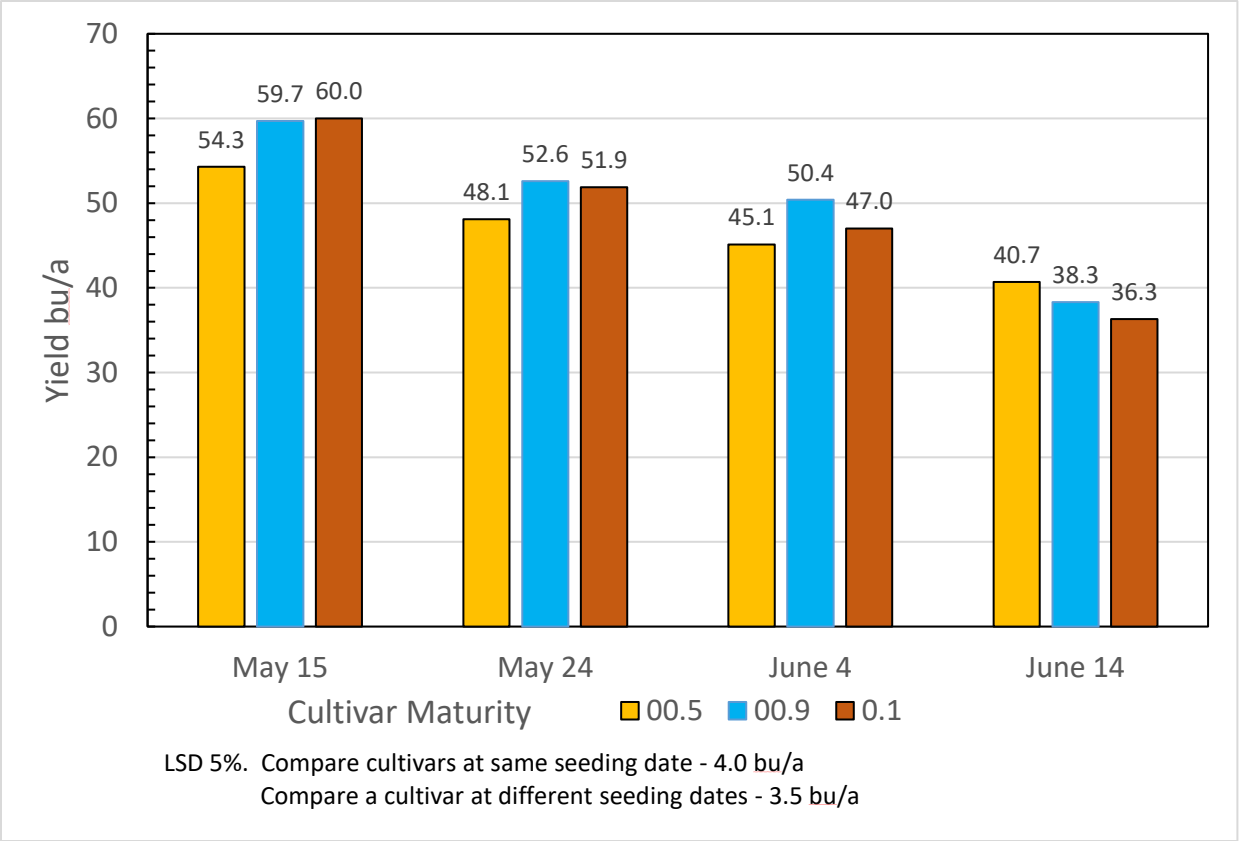
Seeding Date	Plant Height	Height of 1st Pod	Days to Mature	Grain Protein	Oil	1000 KWT	Test Weight
	inches	inches	DAP[1]	%	%	g	lbs/bu
May 15	31	4.6	102	32.8	15.9	181	54.3
May 24	29	5.1	100	32.5	15.8	176	54.8
June 4	30	5.1	98	32.3	14.4	171	56.2
June14	27	3.8	91	31.7	14.0	179	54.3
June 25	23	3.6	--[2]	--	--	--	--
Mean	28	4.4	97	32.3	15.1	177	54.9
C.V. %	6.1	16.0	0.6	0.3	1.6	4.6	1.1
LSD 5%	1.4	0.6	0.5	0.4	0.2	6.9	0.5

Cultivar effects on various agronomic traits averaged over seeding dates

Cultivar Maturity	Plant Height	Height of 1st Pod	Days to Mature	Grain Protein	Oil	1000 KWT	Test Weight
	inches	inches	DAP[1]	%	%	g	lbs/bu
00.5	26	4.0	94	31.7	15.4	167	55.6
00.9	28	4.5	97	32.2	15.2	174	54.9
0.1	30	4.7	102	33.1	14.6	190	54.3
LSD 5%	1.1	0.5	0.5	0.3	1.7	6.0	0.4

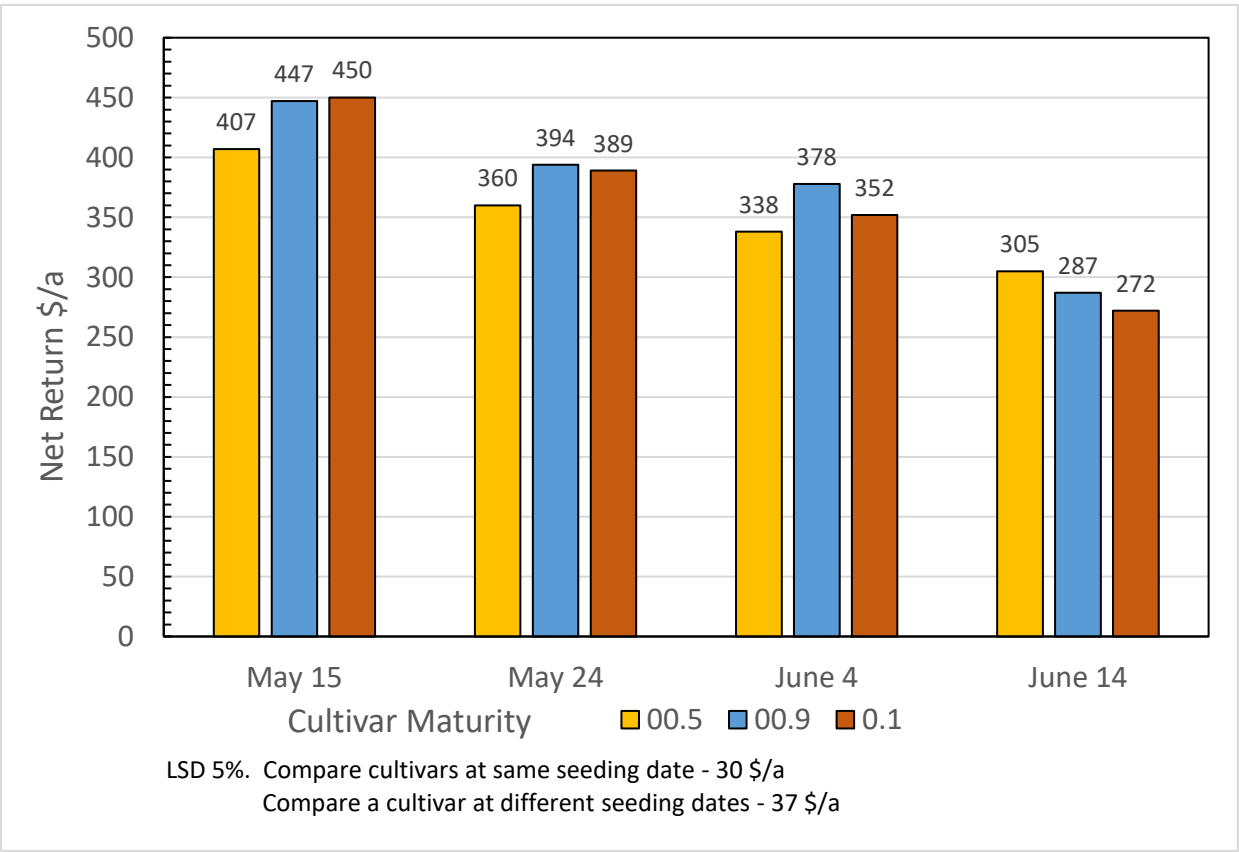
[1]Days after planting. [2]Cultivars seeded on June 25 did not mature prior to the first killing freeze.

Figure 1. Seeding date and cultivar effect on soybean yield.



LSD 5%. Compare cultivars at same seeding date - 4.0 bu/a
Compare a cultivar at different seeding dates - 3.5 bu/a

Figure 2. Seeding date and cultivar effect on net return $/a.



LSD 5%. Compare cultivars at same seeding date - 30 $/a
Compare a cultivar at different seeding dates - 37 $/a